VARTA

TECHNICAL TRAINING
MODULE I

MARKET DRIVERS
CHALLENGES
BATTERY
PORTFOLIO

TEN YEARS AGO, I HAD NO TROUBLE WITH BATTERIES – SO WHY CHANGE?

MARKET DRIVERS

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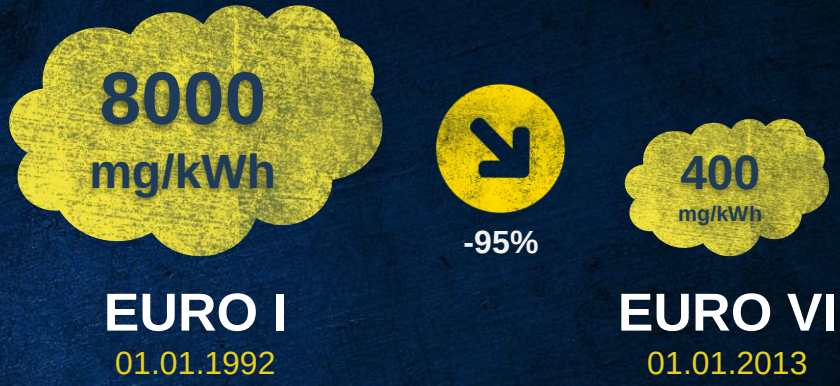
§ **Governmental Regulations (e.g. NO_x)**



€ **Competitive Environment (Focus on TCO)**

MARKET DRIVERS

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Changed User Profile
(e.g. Overnight stays)

Approx. 2 nights/week
2005

Up to 7 nights/week
2018

More electrical devices
(cabin & drivetrain)

Basic
2004

Comfort / Efficiency
2018

WHAT DOES THAT MEAN FOR THE BATTERY?

HOW DOES THAT IMPACT THE BATTERY?

§ 

INCREASED VIBRATION REQUIREMENTS

NO_X REDUCTION → SCR / ADBLUE → END OF FRAME INSTALLATION

€ 

DEMAND FOR ENHANCED CHARGE ACCEPTANCE

FUEL EFFICIENCY → SAILING/COASTING → REDUCED CHARGING TIME

zZZ 

INCREASED NUMBER OF CYCLES

MORE LONG-HAUL-DRIVES → MORE OVERNIGHT STAYS

INCREASED DEPTH OF DISCHARGE

INCREASED ELECTRIFICATION (COMFORT, SAFETY & EFFICIENCY)

WHAT DOES **HIGHER DEMANDS**
MEAN FOR **BATTERIES?**

LET’S DO A SHORT **TIME TRAVEL**
BACK TO **2004**

IN 2004…

Mercedes Benz ACTROS is the Truck-of-the-Year

Greece win the European Championship for the first time

The movies Shrek 2 and Spider-Man 2 are shown in the cinemas

Nokia 2600 most selling mobile phone

Mark Zuckerberg creates the social networking site Facebook

Official opening of the TAIPEI skyscraper

IN 2004…

… the **electrical equipment level** of these vehicles in 2004 is **low** compared to today´s trucks

… **fuel saving functions** which turn of the engine or alternator have **not been in place** yet, which would prevent the batteries from being charged whilst driving

… the battery was not discharged too much and the **driving time was sufficient** to re-charge the battery fully using the alternator during the 8+ hours driving time

… the **VARTA SLI** battery was the right choice to power the average truck **in 2004** optimizing the TCO and providing maximum product reliability

HOW DID A TRUCK LOOK LIKE
10 YEARS LATER?

LET'S JUMP INTO 2014

IN 2014…

The movies Transformers and The Hobbit are shown in the cinemas

Official opening of the One World Trade Center in New Yorkt

Apple iPhone 6Plus most selling mobile phone

VOLVO FH is the Truck-of-the-Year

Netflix expands their business to Europe

Germany win the World Championship in Brazil

IN 2014…

… trucks already were equipped with **lots of comfort functions** like **microwaves, fridges**, TV´s and for personal devices like laptops or smart phones.

… With the **Euro 6** emission standard becoming effective in 2014 many truck manufacturers added **adblue tanks** next to the fuel tank which resulted in the **change of the battery fitment location**.

… drivers are driving on **8 hour shifts** before parking up for a stop.

… the **VARTA EFB** battery was the right choice to power the average truck **in 2014** optimizing the TCO and providing maximum product reliability.

IN 2014…

… trucks already were equipped with **lots of comfort functions** like **microwaves, fridges**, TV´s and for personal devices like laptops or smart phones.

… With the **Euro 6** emission standard becoming effective in 2014 many truck manufacturers added **adblue tanks** next to the fuel tank which resulted in the **change of the battery fitment location**.

… drivers are driving on **8 hour shifts** before parking up for a stop.

Fitting a conventional battery to those well equipped long-haul trucks will lead to a shorter lifetime, increase the risk of potential breakdowns and therefore resulting in an unnecessary TCO increase.

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!!

BETWEEN 2004 AND 2014 LONG-HAUL TRUCKS HAVE EVOLVED QUITE QUICKLY!

LET’S JUMP INTO TODAY
…AND TOMORROW

IN 2018 AND BEYOND

…between 2014 and 2018 Long-Haul Truck **continued to evolve** even quicker than before

… the trend of adding **more comfort devices** continuous

… batteries are mainly fitted at the **end-of-frame** of the trucks

… the amount of **overnight stays** is growing to **more than 5 night** per week

… modern **fuel saving functions** like sailing or start-stop, that switch of the engine and use **battery to power the consumers** are slowly being introduced to the market

… one big driver of the changes is the **need to increase the comfort** of the drivers through the usage of so called cab or **parking coolers**

IN 2018 AND BEYOND

… to answer all these changes in the market we will launch the
VARTA Promotive AGM Truck Battery in 2019!

The world's first **Original Truck AGM** battery

Developed alongside with **leading OEMs**

Coming with real **AGM technology** ruling out the possibility of **acid stratification**

Delivers **reliable performance** at even low state of charge it it the one and only solution to **optimize your TCO**

OKAY, I UNDERSTAND THE CHANGED LANDSCAPE

BUT HOW COULD I CHOOSE THE RIGHT BATTERY FOR MY APPLICATION?

THE VARTA CV RANGE

ONE APPLICATION
ONE TECHNOLOGY

PERFORMANCE BY TECHNOLOGY

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	VIBRATION RESISTANCE	CHARGE ACCEPTANCE	CYCLE LIFE	DEPTH OF DISCHARGE
				
				
				
				

USP BY TECHNOLOGY

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HIGHEST DEMAND

up to **6X** longer life

80% DOD
Deep Cycle Capabilities

V4
Highest Vibration Resistance

MADE IN **GERMANY**
Highest manufacturing standards

HIGH DEMAND

up to **3X** longer life

50% DOD
Heavy Cycle Capabilities

V4
Highest Vibration Resistance

MADE IN **GERMANY**
Highest manufacturing standards

BASIC DEMAND

Maintenance Free

Multi Start

High Vibration Resistance

EU

MADE IN **EUROPE**
Highest manufacturing standards

BASIC DEMAND

Multi Start

High Vibration Resistance

EU

MADE IN **EUROPE**
Highest manufacturing standards

APPLICATION BY TECHNOLOGY

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HIGHEST DEMAND

Highly Equipped Truck

City Transit Bus

Refrigerated Van

HIGH DEMAND

Truck

Refuse

Cement Mixer

School Bus

BASIC DEMAND

Urban Delivery

Beverage

Furniture

BASIC DEMAND

Agriculture

Construction

BATTERY EXPERT KNOWLEDGE:

EN CAPACITY vs. USABLE ENERGY (DoD)

BATTERY EXPERT KNOWLEDGE

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WHAT'S THE BENEFIT OF HIGHER DoD?

EN Capacity: Battery Capacity printed on the label, determined by standard test according to European Standard Test (EN 50342-1)

Depth of Discharge: (DoD) - Amount of energy drained out of battery during discharge process

Usable Energy: Real-Life performance of battery with regards to usage profile and battery technology considering EN Capacity and DoD.

BATTERY EXPERT KNOWLEDGE

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WHAT'S THE BENEFIT OF HIGHER DoD?

HIGHEST DEMAND

210Ah (EN)

HIGH DEMAND

240Ah (EN)

BASIC DEMAND

225Ah (EN)

BATTERY EXPERT KNOWLEDGE

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WHAT'S THE BENEFIT OF HIGHER DoD?

HIGHEST DEMAND

210Ah (EN)

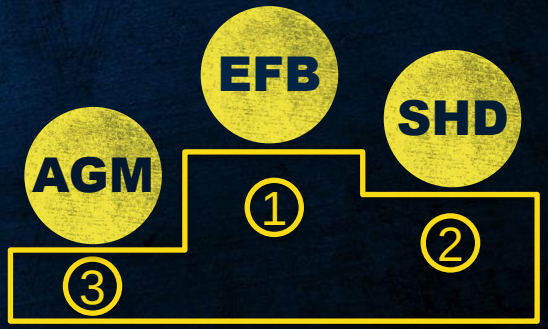
HIGH DEMAND

240Ah (EN)

BASIC DEMAND

225Ah (EN)

DOES THAT MEAN THAT AGM IS THE "SMALLEST" BATTERY?



BATTERY EXPERT KNOWLEDGE

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WHAT'S THE BENEFIT OF HIGHER DoD?

HIGHEST DEMAND

210Ah (EN)

80% DOD

Deep Cycle Capabilities

ProMotive AGM

Battery Capacity (EN Standard) = 210 Ah

Recommended max. depth of discharge = 80%

USABLE ENERGY: **168 Ah**

+270%

HIGH DEMAND

240Ah (EN)

50% DOD

Heavy Cycle Capabilities

ProMotive EFB

Battery Capacity (EN Standard) = 240 Ah

Recommended max. depth of discharge = 50%

USABLE ENERGY: **120 Ah**

+165%

BASIC DEMAND

225Ah (EN)

Starter Battery

ProMotive SLI

Battery Capacity (EN Standard) = 225 Ah

Recommended max. depth of discharge = 20%

USABLE ENERGY: **45 Ah**

BATTERY EXPERT KNOWLEDGE

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WHAT'S THE BENEFIT OF HIGHER DoD?

HIGHEST DEMAND

210Ah (EN)

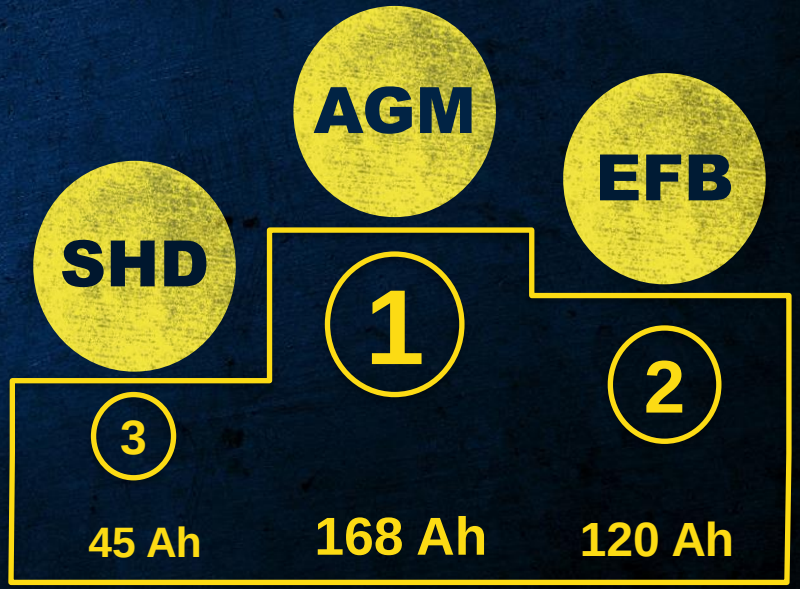
HIGH DEMAND

240Ah (EN)

BASIC DEMAND

225Ah (EN)

AND THE REAL WINNER IS…



THAT SEEMS A BIT THEORETICALLY…

WHAT DO THESE NUMBERS MEAN FOR REAL LIFE APPLICATIONS?

LET’S TAKE A LOOK TO THE
POWER DEMAND OF DIFFERENT
COMFORT FUNCTIONS

BATTERY EXPERT KNOWLEDGE

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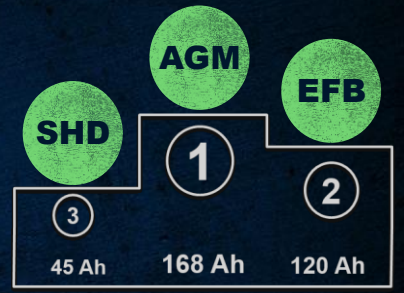
ENERGY DEMAND OF COMFORT FUNCTIONS



INTERIOR LIGHTS:

POWER DEMAND: 2…5 AMPERE*

SCENARIO:

SATURDAY:	22^{00} … 24^{00}	→ 2H
SUNDAY:	7^{00} … 8^{00}	→ 1H
	19^{00} … 22^{00}	→ 3H
	TOTAL	6H

AVERAGE POWER DEMAND: 3,5 AMPERE

→ 6H · 3,5A = 21AH

= 21AH

***Source:** Volvo Trucks “Stay in Power”

BATTERY EXPERT KNOWLEDGE

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ENERGY DEMAND OF COMFORT FUNCTIONS

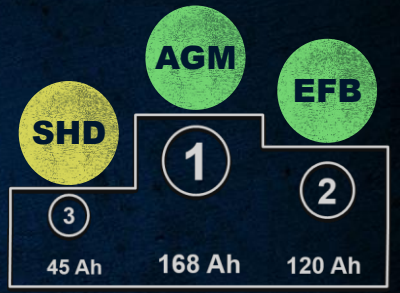
ENTERTAINMENT:

POWER DEMAND: 4…5 AMPERE*

SCENARIO:			
	SATURDAY:	22^{00} … 24^{00}	→ 2H
	SUNDAY:	7^{00} … 9^{00}	→ 2H
		18^{00} … 22^{00}	→ 4H
		TOTAL	8H

AVERAGE POWER DEMAND: 4,5 AMPERE

→ 8H · 4,5A = 36AH



= 21AH

= 36AH

TOTAL: 57AH

*Source: Volvo Trucks “Stay in Power”

BATTERY EXPERT KNOWLEDGE

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ENERGY DEMAND OF COMFORT FUNCTIONS

FRIDGE:

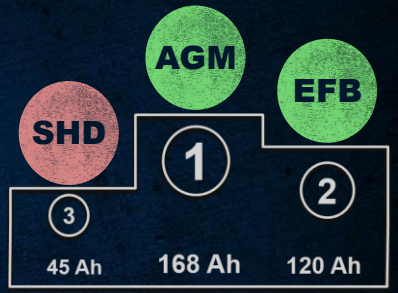
POWER DEMAND: 1…3 AMPERE*

SCENARIO:

SATURDAY:	22^{00} … 24^{00}	→ 2H
SUNDAY:	0^{00} … 22^{00}	→ 22H
TOTAL		24H

AVERAGE POWER DEMAND: 2 AMPERE

→ 24H · 2A = 48AH



= 21AH

= 36AH

= 48AH

TOTAL: 105AH

*Source: Volvo Trucks “Stay in Power”

BATTERY EXPERT KNOWLEDGE

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ENERGY DEMAND OF COMFORT FUNCTIONS

PARKING COOLER:

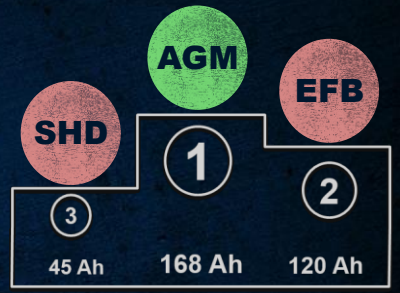
POWER DEMAND: 10…30 AMPERE*

SCENARIO:

SATURDAY:	---	→ 0H
SUNDAY:	15^{00} … 18^{00}	→ 3H
	TOTAL	3H

AVERAGE POWER DEMAND: 20 AMPERE

→ 3H · 20A = 60AH



= 21AH

= 36AH

= 48AH

= 60AH

TOTAL: 165AH

*Source: Volvo Trucks “Stay in Power”

OKAY, NOW IT'S VERY OBVIOUS WHY ALL THESE ELECTRICAL CONSUMERS STRESS THE BATTERY

BUT WHAT HAPPENS WHEN I'M DRIVING IN COLD COUNTRIES AND DON'T NEED A PARKING COOLER?

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	SCENARIO I (CENTRAL EUROPE - SUMMER)		SCENARIO II (SCANDINAVIA - WINTER)	
	6H · 3,5A	= 21AH	10H · 3,5A	= 35AH
	8H · 4,5A	= 36AH	8H · 4,5A	= 36AH
	24H · 2A	= 48AH	24H · 0,5A	= 12AH
	3H · 20A	= 60AH		
			10H · 7A	= 70AH
	TOTAL = 165AH		TOTAL = 153AH	

IS THERE AN EASY WAY TO UNDERSTAND THE REAL DEMAND OF THE VEHICLES IN MY FLEET?

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NEED ANALYZER

OKAY, THE NEED ANALYZER HELPS ME TO FIND THE RIGHT BATTERY.

BUT DOES THE RECOMMENDATION MAKES SENSE FROM THE BUSINESS POINT OF VIEW?

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TCO CALCULATOR